



Operationalizing Modern Monetary Theory, Drawdown, The Green New Deal, "Lettuce Wrap"
Economics, and The Orange Economy:

An Institutional Approach to Global Climate Change and Other Issues of Ecological Health



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Abstract

Arguably, more than anything else, Modern Monetary Theory is a theory that supposes that sovereign monetary regimes are not limited by their governmental budgets, but instead by the productive capacity of their economies. MMT has further argued that, variously, inflation and Full Employment are the only constraints that exist upon government spending. This paper suggests that government budgets are being intuitively used as a proxy for capacity on the one hand, as is inflation on the other. It hopes to develop MMT in terms of its key institutionalist insight, as suggested by J. Fagg-Foster and validated by Allan Greenspan: that the technical propensities of society are the true limits to what it might do. The paper will, further, point out some of the possible issues with the use of inflation as a proxy for capacity. The primary concern of the paper in this area, however, is the reality that, generally, environmental degradation counteracts inflation, rendering inflation's use as a proxy for capacity somewhat dangerous. This paper serves as a nexus between MMT as proposed by Randall Wray, *A Safe and Just Space for Humanity* by Kate Raworth (2012), *Drawdown* by Paul Hawken (2017) and *The Orange Economy*. It is suggested that the paper, *How to Pay for the Green New Deal* (2019), by Yeva Nersisyan and Randall Wray is a first step away from the “dual proxies” of government budgets and inflation and into the actual determination of the value of capacity. John B. Taylor in 1993's *Discretion versus Policy Rules in Practice* and César Hidalgo in *The Product Space* argument (Hidalgo, et al., 2007) suggest the ability to measure real and complex factors in an economy. Given the level of big data gathering, econometric, machine learning, and neural networking technology available, operationalizing MMT suggests a “real world” analysis. Knowledge, creativity, and innovation from a variety of popular and professional sources will be utilized to come up with ways to develop, ‘dovetail,’ and maximize society's capacity to meet its greatest needs and wants. It is from this analysis that it is suggested that the safe space for humanity and all the Earth's systems [Raworth, 2012] be found. In addition to the more generalized meta-analyses, specific suggestions will be made to improve the U.S. Congressional Resolution, the *Green New Deal*, by applying the solutions of Paul Hawken's *Drawdown* (2017) to it. Specific policy suggestions for the implementation of these solutions are also provided.

Key words: Modern Monetary Theory; Institutionalism; Ecological Economics; Neoclassical Economics; Drawdown

I. Introduction

This paper suggests a new focus for economics: how to fit society into a safe space for Humanity (Raworth, 2012) and for the Earth. Given that the necessary conditions for welfare maximization are secure, healthy, happy, and clean (SHHC) subsistence and zero non-renewable resource use (NRRU),ⁱ the job of economics is, through technical analysis, to discover the real capacity available to global society, and through ingenuity, creativity, spirituality, technology, and psychology—informed by both interdisciplinary professional and popular sources; to develop it; and to put it to best use. The trick is to understand how to fit society within a “Lettuce Wrap”ⁱⁱ bounded by these welfare maximizing constraints. *A Safe and Just Space for Humanity* (Raworth, 2012), Modern Monetary Theory (MMT), Product Space, Orange Economics, the Circular Economy, Institutional, Neoclassical, and Austrian economics all contribute to an understanding of what these constraints are and how to fit within them.

II. The twin necessary conditions and the sufficient condition of welfare maximization

II.i. Neoclassical Economics and the infinite disutility of non-subsistence

William Stanley Jevons (1888), Frank Ramsey (1928), and Kenneth Arrow (1999) consider the utility of bare minimum subsistence to be infinite. Jevons writes, “The total utility of the food we eat consists in maintaining life and may be considered as infinitely great” (1888, “Law of the Variation of Utility” section, para. 3). What this means in effect is that the disutility experienced at non-bare subsistence is infinite.ⁱⁱⁱ This caveat of Microeconomics is here assumed, as is that the intercomparable cardinal utility of experienced at subsistence above bare minimum, yet below SHHC subsistence (*hypo-subsistence*),^{iv} is negative and that the utility experienced by the consumption of goods above a SHHC level (hyper-subsistence), is positive. The utility experienced at SHCC subsistence is, therefore, zero (SHHC subsistence).

It is furthermore assumed that, given that the utility of bare-subsistence goods is cardinal, intercomparable, and infinite, and given that every unit of consumption up to SHHC subsistence is cardinal, intercomparable, greater than negative infinity, and less than zero, it is also assumed that any and all extra-subsistence consumption is ordinal, intercomparable, and less than any and all SHHC subsistence consumption.^v

II.ii. infinite generations and non-renewable resources

It is an established caveat of environmental economics that a natural resource enjoyed by an infinity of future generations has an infinite utility value. Therefore, its use will always result in an infinite welfare loss. This observation is usually presented as a set up to justify the use of a positive time discount of future environmental damage (for example, see Viscusi, 2007).^{vi} However, no environmental discounting argument challenges the fact of an infinite efficiency loss from the use of any NRRU. Therefore, the value of nature’s non-renewable assets is infinite, even under an anthropocentric assumption of value at the expense of any other.

II.iii. The Necessary and Sufficient Conditions of Welfare Maximization

II.iii.a. As a result of the findings of section a and section b, the necessary conditions for welfare maximization are universal subsistence and zero NRRU. The upper and lower bounds of the Lettuce Wrap is universal SHHC subsistence (top) and zero NRRU (bottom), respectively. Resolution of conflict between these two bounds is achieved through institutional adjustment. This resolution is the suggested new focus of economics and is the topic of this paper. The sufficient condition for welfare maximization is happiness maximization within the two bounds of welfare maximization, the means by which to achieve has been suggested, for example, by happiness research.^{vii}

III Path Dependency and Derived Demand

III.i. Path-dependency David (1985) suggests the existence of historically determined social paths upon which society has become dependent. No analogy need be made to understand the path-dependent nature of Anthropogenic Global Climate Change (AGCC): The paths that society is dependent upon are the roads its carbon emitting vehicles travel, and the stuff of which those roads are made.^{viii} Though this is the greatest Global-Greenhouse-Gas (GGG) emitting path dependency, it is not the only one. In fact it is likely that the majority of the cost of drawing GGG significantly down is the cost of institutional adjustment incurred by changing paths to Earth-friendly ones, at this critical juncture.

II.iii. Derived Demand^{ix} Where do the paths that we are dependent on lead? The value (Willingness to Pay–WTP^x) for environmental destruction is explained by value of the end goals that it created. The value of the path that leads to an end goal is derived from the value of the end goal. Therefore, if

the society is dependent on a path leading to an end goal, the value of the end goal will determine the value of the path. If this path is environmentally destructive, then the value of that environmental destruction is determined by that end goal. “Getting off” our dependency on environmentally destructive paths in attaining our ultimate goals will reduce the WTP^{xi} for environmental destruction entirely outside of whatever intrinsic environmental destruction the consumption of that end goal involves.

IV. Maximizing Value: utility functions as a function of Institutions and the first order institutional change

“No doubt men, even now, are capable of much more unselfish service than they generally, render: and *the supreme aim of the economist is to discover how this latent social asset can be developed most quickly and turned to account most wisely.* [emphasis added]” - Alfred Marshall (1920, p.11.) As an expansion Marshall’s revelation—fundamentally, where c is the choice-set of goods, $c_1, c_2, c_3...$ representing all goods both market, and non-market, and $U(c)$ is the utility of consumption of c , an optimized basket of goods chosen of c , under constraint by the representative agent, welfare is maximized at $\max \sum U(c)$, and V , value, is maximized at $U(c) = \max(I)$, where I (institutions), is maximized. It is here assumed that selfless service is but one institution or “social asset” to be developed, among many. The general conclusion that the economist’s job is to maximize I -institutions (institutional value), is not only surprisingly consistent with institutionalism, but with microfoundations as well.^{xii}

This is relevant because it means that increasing consumption constraints need not lower the level of subsistence Value that an agent may experience. If institutions change such as to alter the utility functions of individual agents, and this change offsets losses to utility from a consumption restraint or changes the value of the utility derived either by the attainment of ultimate goals or the means to attain them, increasing restraints on consumption need not reduce utility.

If, for example, social institutions changed such that conspicuous consumption no longer was a source of status and consequently, feelings of self-worth, expensive clothing, jewelry, and transportation would no longer hold value, or at least as much value, and constraining their consumption would not cost as much as if the social institution of conspicuous consumption had not changed.

As another example, if connecting with friends and distant family in *in real life* interactions produce high utility of consumption for an individual, then the car rides or plane trips to visiting them would essentially hold an equally high value—the value of the transportation being a function of the value of the visits with friends and family. Banning cars would result in a significant decrease in the utility of an individual’s consumption.

If, however, communal housing were to become the norm for habitation with friends and the social institution of separate home ownership perceived to be of only, essentially, ceremonial value, there would be no utility loss to decreasing housing demand by cohousing. Similarly, if the institution of the atomic family unit were cast aside as having no intrinsic benefit, on balance, but again was an instance of ceremonial behavior, the loss of the use of automobiles would come at a far lower cost of consumption.

Critical to the understanding of institutions and their effect on agent-utility functions is their creation of misperceived utility, such that $U \neq U(p)$, where U is utility and $U(p)$ is perceived utility. This “market” failure is institutionally created. It is not irrationality, per se, because *misperception* is a rational

response to irrational (ceremonial) institutions, though it may have other sources resulting from false information. There may be “Green Eggs and Ham” component to it whereby the utility that is not experienced cannot be known creating an information failure. Somebody may frown on the idea of walking to work until it is experienced for several weeks at which point the new walker may no longer wish to drive to work.

V. Hitting the target: A juxtaposition of two insights

V.ii. MMT and The Environment Environmental destruction increases whether allowed at home or exported abroad. In either case, greater rates of Earth-destruction have the effect of lowering prices. An inflation constraint is not a green constraint. As a proxy for capacity, in that congressional constraints “understate” it, they are better, other things being equal, for the environment than an inflation constraint. Increasing aggregate supply by increasing NRRU puts a stabilizing or downward pressure on prices. This is the case whether domestic non-renewable resources are used or their use is exported abroad.

As Nersisyan and Wray (2019) write in *How to Pay for the Green New Deal*, “However, as employment rises to boost general consumption, at least some of that will be met by imported consumer goods. This is not necessarily something to be avoided, as many nations need to export consumer products to obtain earnings they need to import green technology” (p.51) By exporting environmental destruction, are we actually avoiding it? As low-price exporting countries destroy forests; decimate animal species; and pollute the Earth, water, and sky at an increasing rate as export demand rises, is this a viable alternative to domestic price-rises? Is this dirty importation valid because cheap, dirty, exporters *might* use some of the resources from Earth-destroying production to green? The problem stems from the fact that expanding dirty consumption increases capacity that is not green-constrained.

The GND involves demand increases as wages rise and educational opportunities expand-these raise the wealth of consumer-workers. As Randall Wray points out as reported in Mackintosh (2021) the Marginal Propensity to consume consumer-workers is 98% of income. This means increased use of non-renewable resources. The expansion of housing alone which is likely to occur as a result of the GDN as reported in Nersisyan and Wray (2019), creates a high negative impact on the environment. (Janjic, 2014; OECD, n.d.). Green energy has negative environmental effects as well. (Mulhern, 2020).

MMT is in need of a green constraint: a maximally efficient green constraint is a constraint on any and all NRRU. Green substitution alone involves continued non-renewable resource exploitation (Mulhern, 2020). By aiming to live at SHHC and adjusting resource use so as to do so at the lowest possible cost in non-renewable resources, we maximize welfare.

The command over NRRU—money—will inevitably result in their continued exploitation and use. For example, a job guarantee that employs workers to improve a greening (Forstater, 2006) and pays workers in the command over the use of non-renewable resources (money) results in the greater use and consumption of these resources, the maximally efficient green constraint is being violated by a green program. If all NRRU were banned and money only commanded renewable resources, it wouldn't present much stress on the environment. But if real goods and services were provided to workers as compensation for work provided by a Job Guarantee, federal or otherwise, existing housing could be made communal, food that would otherwise be wasted used to feed workers, (See *table 1*) and transportation to work sites provided by cleaner means.

How to Pay for the Green New Deal (Nersisyan & Wray, 2021) is a marked progression for MMT as it is a first attempt to analyze capacity and understand how it can be arranged to increase efficiency in a plenary manner. Its approach, however, suffers from using homogenous good as a proxy for heterogenous ones, ignorance of the deep cost to the environment by increasing aggregate demand for non-renewable resources, and no interest in forming programs that utilize capacity efficiently.

The article mentions as a caveat^{xiii} that implies that proxying heterogeneous goods in terms of real GDP is problematic. The assumption of this approach is that every unit of homogenous good is produced by an equivalent quantity of homogenous labor and be transferred between jobs as such. If 10 workers created 100 tanks a year and tanks are valued a x percent of GDP, the same 10 workers can create the number of windmills valued at x percent of GDP. Because of Kapital,^{xiv} skill, utility, and other complex differences between goods creation, this is a likely inadequate measure which is likely to result in shortages or labor surpluses. As discussed, the increased demands on resources increasing NRRU need to be clearly understood and reduced to zero. Lastly, an MMT requires that the most efficient programs are being employed. Though an absurd claim in its own right based on the fact that a program could not be accurately costed if what it consisted of was not known, Nersisyan and Wray (2019) in presentation by one of its authors (Nersisyan, 2020) claim that the analysis “...never said what the GND was. To produce maximally efficient results, it seems to go without saying that program goals should be met as efficiently as possible, otherwise people get unnecessarily hurt, and in establishing the delicate balance of resource use to fit within a Lettuce Wrap, this is going to be vital

VI. Capacity and Capabilities

Hidalgo and Hausmann (2009) and Hausmann and Hidalgo (2010) have suggested the use of a *diversity* theory of capabilities. They write: “capability requirements of a product, determines whether that country can produce that product or not.” In a YouTube video, Hidalgo (2010), reveals that after four years of attempting to measure capabilities, i.e. capacity, or capabilities-the critical component of capacity—that he and his colleagues discovered that the “Lego pieces,” in contradistinction to the “Putty” of neoclassical growth models, (Ramsey, 1928; Solow, 1956) “...which could be regulations, could be forms of Kapital, could be capabilities that exist within an organization, could be norms; do workers show up on time? Do they get drunk before coming to work, or are they responsible? (2010, @ 4:54) are measurable.

The “go then know” suggested by an inflation constraint being the only limit to capacity approach (Kelton, 2020), as well as the “tax then go” PAYGO method of congressional-budget -constraint capacity proxying will likely incur far higher costs than the attempt to learn precisely what programs need and what is available to meet them as efficiently as possible. The Product Space approach suggests that learning what capacity is to a high degree of specificity is within reach. Though more research is suggested to determine the exact capabilities of modern technology to perform capacity analysis, doing as much of this as possible will always be less costly than incurring the costs of the huge welfare losses to current and future generations by not.

It must be pointed out that the Product Space (Hidalgo, et al, 2007) argument has a different goal than that suggested by the “lettuce wrap” argument; while the former has sought to understand what capacity is and what capabilities are in order to develop Global Southern economies along Global Northern lines, the current approach is to understand what capacity is and what capabilities are in order that consumption can be developed to fit within a “Lettuce Wrap” necessary to maximize society’s welfare.

John Taylor writes, “Interpreting the level and the growth rate of the economy’s potential output—which frequently is a factor in policy rules—involves predictions about productivity, labor-force participation, and changes in the natural rate of unemployment.” (1993, p.197) While again inconsistent with the goals of Lettuce Wrap Economics, and with MMT having conducted research into at least one of these more complex areas, Taylor suggests a more complex approach to the economy than formulaic analysis can provide.

Neuro-networks, econometric technology, quantum computing, and machine learning, not to mention “big data” techniques are available to understand capacity and global capabilities. Once capacity is accurately measured, and social programs appropriately triaged, their specific needs understood, capacity can be developed to maximum efficiency to meet SHHC needs while involving minimum to zero NRRU.

Capacity’s development is accomplished through both technocratic and popular know-how, ingenuity, creativity, and spirituality. It is interdisciplinary and involves a global “let us rap” in which experiences, ideas, and stories are shared to find the best ways to subsist everybody without harming the Earth. *Table 1* lists examples of some ideas that might be used to develop capacity so as to meet the necessary conditions for welfare maximization.

Conclusion

The new challenge to- and goal of- economics is to fit society into optimal constraints. That this idea is utopian, impractical, or impossible misses the point. Doing all that we can to fulfill the conditions of welfare maximization is sufficient and superior to not doing so at all. It should be noted that profit, wage, and rent motivated production, unless these proceeds only go to pay for services and/or renewable material consumption, are no longer tenable.

Frankly in flouting the Welfare of future generations and of the animals, plants, and living Earth herself, even if the goal is employing the unemployed, the end of poverty, or developing the “Third World,” the aggregate-demand economist is losing moral high-ground by persisting in ignoring the rather obvious destruction that this incurs.

Lastly, incentivizing production with the Earth’s further destruction is no longer efficient, it if ever was. It is likely that less labor will be required to meet minimum universal subsistence needs than meeting the current extra-subsistence ones minus the needs of those living at hypo-subsistence. Meeting them need instead be understood as a social duty. Profits, wages, and rents are not necessary to incentivize subsistence production. Instead it will be incentivized by the positive effects of social participation; the negative effects of social reprobation for failing to; and getting lost in the *flow* of work with established positive benefits^{xv} (Belic, 2011)—suggesting a positive utility to labor.

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Table 1

Some Further and Reiterated Ideas

- Drawdown: though it is acknowledged that Drawdown suffers from ignoring complex environmental effects that result from following its suggestions, much can be taken from its analysis. Light research has revealed that all of the Drawdown solutions that were costed in its original 2017 release, and for which savings tallies were made, resulted in 630 gigatons of GGG being drawndown at a zero net cost; whereas The GND given a best cost estimate, provided by Nersisyan and Wray (2019) draws down 172 gigatons of Carbon gas (not other GGGs) at a cost of 7.6 trillion dollars, though presented without savings estimates included. This is an example of the comparative efficiencies that can be gained from a Veblenian-styled technical program analysis. (Drawdown made cost change in a 2020 digital pamphlet involving a variant cost analysis.)

GND calculations from Center for Climate and Energy Solutions (2019); Countryeconomy.com (2018); and Nersisyan and Wray (2019).

- The Thorium Silver Bullet: Thorium promises safe nuclear energy with zero release of GGG. Deficit spending along MMT lines could be used by India, who is rich in Thorium; China, who had already been developing it in partnership with the United States until the Trump administration withdrew; and the United States to finance a massive effort to develop and implement Thorium the world over which, especially if it powered a world of electric-only cars, would significantly reduce GGG emissions and benefit India immensely.
- All foreign aid is tied to the recipient country educating girls at the highest possible rate and engaging in the necessary amount of family planning education and policy.
- The Orange Economy: This Colombian model designed by Restrepo & Marquez (2013) envision a new model for global southern economies involving low impact production of indigenous craft goods and services. This is a vision for development with far lower social impact than is being currently suggested; of course, it informs the global North's consumption and production as well.
- The IMF changes its charter from economic development to the drawdown of greenhouse gases.
- The Circular economy envisions an end to planned obsolescence and the introduction of repair and reuse over "use and throw away." (Kneese, 1988)
- Wake up from the American Dream. The American Dream is a global environmental nightmare: the primary motivation for existence on Earth will change from the ownership of an atomic (suburban) home and one or more automobiles to the joy found in shared communal living and other activities, working towards a common goal and simply doing nothing.
- A globally coordinated mobile labor system will be designed such that labor will move to where it is most needed, leaving jobs that are environmentally destructive, to be replaced by ones that are environmentally healing—where they will do the most good, such as in reforestation of the equatorial regions of the world. (See Appendix C) This may offer solutions to immigration, global poverty, and reducing the mitigation costs of greening.
- The World Bank will continue to work to end poverty, but specifically in terms of coordinating existing and purely sustainable resources to provide clean, secure, healthy subsistence wherever it is needed, working with the IMF to locate work and workers to where there is need for them, existing housing and food that can be provided with less cost in transportation. Much of the labor required to realize the solutions of Drawdown can be incentivized in this way.
- Legalization of the controlled use of psychedelic drugs in order to increase a sense of well-being and interconnectedness, to move agents away from illusory utility derived from material consumption, and closer to the real utility of togetherness as spiritual beings at one with each other and with nature, yielding fantastic cost savings to the natural environment and to each other (Bowles, 2020; Pollan, 2019).
- All food residuals produced by restaurants and other sources, through computerized management, transportation that is as efficient as possible (human or solar powered) that is not consumed at the end of the day is immediately redistributed as payment to government.

Endnotes

ⁱ Non-Renewable resources generally refer to resources whose use would take away from the ability of all human generations throughout an infinite timespan to enjoy the Earth in her natural state at least as of now—the current period: time zero.

ⁱⁱ This is a healthier alternative analogy to the analogy that Raworth (2012) uses—a “doughnut,” the body of which is internally bounded by a *social foundation* and externally by an *environmental-use ceiling*. Remaining within this “safe and just” boundary requires that eleven social- and nine environmental- criteria be met. In addition to being healthier, the lettuce wrap analogy reflects the comparatively “thin” definitional criteria for ‘a good society’ presented in the current work.

ⁱⁱⁱ If the disutility experienced at bare subsistence were less than infinity, than the utility of consumption above bare subsistence, without adding orders of infinity (Matson, 2007), would be greater than infinity and have no meaningful value.

^{iv} As distinct from *non-subsistence*.

^v In general, the greater the utility stakes involved, the greater is its comparability between agents.

^{vi} Glock (2021) debunks Viscusi (2007) and the more general “*infinite opportunity cost*” of *environmental damage discounting* argument(s) with greater specificity.

^{vii} While a survey of this research and further research into what causes happiness is outside of the scope of the current article, Belic (2011) offers a good survey of happiness research up to the time of its release, at least, in readily accessible documentary film form.

^{viii} Timperley (2021) reports that eight percent of carbon emissions are emitted by the manufacture of cement.

^{ix} Which is a neoclassical idea “borrowed” from Karl Menger (1950).

^x Assuming that it accurately proxies utility value.

^{xi} See footnote X.

^{xii} North (1991, 1993) essentially argue that utility maximizing agents generally, collectively, create institutions to in order to reduce transaction costs, thereby creating efficiency. Where Douglas’ arguments imply that utility-maximizing agents increase efficiency by creating institutions, Dugger (1993) implies that power relationships create institutions and implicitly reduce their efficiency. Consistent with Dugger (1993), the current argument stipulates that institutions generally decrease efficiency as they are formed around ownership begun by the ownership of women (Veblen, 1899).

^{xiii} “We certainly acknowledge that some of the resources released by the fossil fuel and healthcare sectors may not be appropriate for GND projects, although a good case can be made that a lot of the workers would be able to contribute to either working in GND projects or helping with administration (p.50)

^{xiv} Kapital is spelled with a “K” to avoid confusion with financial *capital*.